

### Abstract

A method and laser system effect rapid removal of material from a workpiece by applying heating energy in the form of a light beam to a target location on the workpiece to elevate its temperature while maintaining its dimensional stability. When the target portion of the workpiece is heated, a laser beam is directed for incidence on the heated target location. The laser beam preferably has a processing laser output that is appropriate to effect removal of the target material from the workpiece. The combined incidence of the processing laser output and the heating energy on the target location enables the processing laser output to remove a portion of the target material at a material removal rate that is higher than the material removal rate achievable when the target material is not heated.